# EPA ENERGY STAR Climate Controls

Stakeholder working meeting

RCCS Field Savings Metric

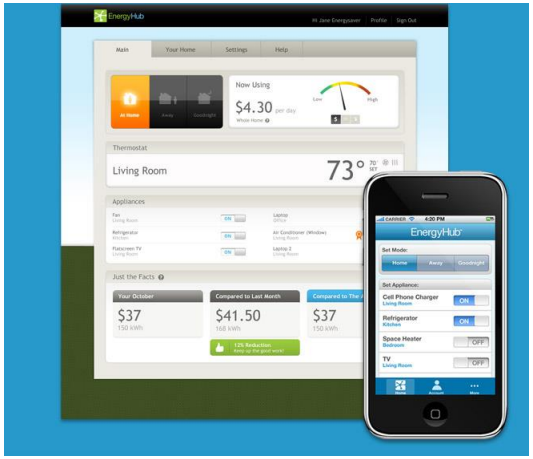
2/13/2015

# Agenda

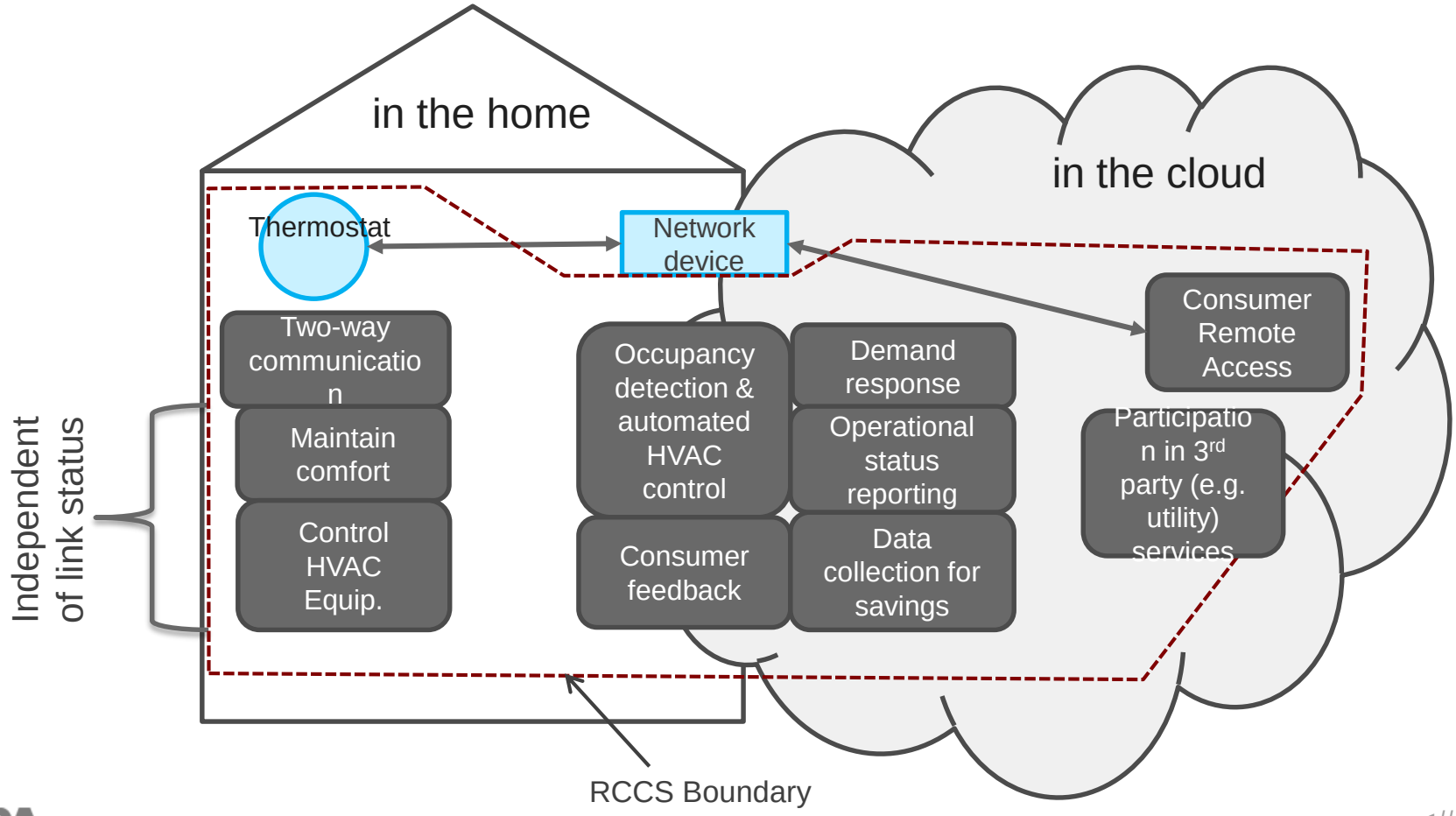
- Reminder of what EPA is aiming for, purpose of the meeting (skip if no new participants)
- Any administrative issues?
- Follow on to 1/30 discussion of baselines
- Circle back to metrics – any comments?
- Agreed actions
- Parking lot

# Introduction – A New Approach

- Large potential savings
- New product types & business models emerge
- Measuring RCCS savings being done today, but…
  - no standard methodology
  - savings claims vary widely

# Blend of local hardware and cloud services provides RCCS capabilities



# Program Outline

- Recognition for RCCSs that save energy in the field
- To earn the ENERGY STAR:
  - RCCS criteria that enables savings
  - Periodic reporting of savings
- Product includes service component
- ENERGY STAR Partner is service provider
- ~~Annual shipments~~ → Periodic field data
  - Calculate program emissions reductions
  - Serve as energy savings data for QPL

# Step 1: Metric

- Ranks RCCSs based on field savings
- Uses data from RCCS or publically available
- Preserves consumer privacy
- Protects proprietary information
- Practical to calculate
- Activities to date
  - Framework 11/5/14; San Francisco meeting 11/19/14
  - Algorithmic framework 1/12/15; Stakeholder call 1/16/15
  - Stakeholder call and next algorithmic framework, 1/30/15

# Administrative concerns?

- Has everyone who can use it gotten an invitation to Google Drive?
- All EPA docs also available at energystar.gov.
- Anyone not on the email list for this discussion?  (You should have gotten an email yesterday.)

# Follow on to 1/30 discussion: baselines

- Data from one service provider
- Data from one utility
- Data call document – some asked for a clearer idea of what we want, so here it is.  Two questions:
  - Regions defined by DOE climate zones easy enough to calculate?
  - When can participants meet this request?

# Data from one service provider

Table 1 - Date method

| Season | Data Type | Median Tbase (°F) | Std Dev Tbase (°F) |
|---|---|---|---|
| Heating | Tin | 71.2 | 3.8 |
| Heating | Tstp | 69.9 | 5.0 |
| Cooling | Tin | 73.4 | 3.3 |
| Cooling | Tstp | 75.0 | 4.6 |

Table 2 - Runtime Method

| Season | Data Type | Median Tbase (°F) | Std Dev Tbase (°F) |
|---|---|---|---|
| Heating | Tin | 71.2 | 2.8 |
| Heating | Tstp | 70.0 | 4.0 |
| Cooling | Tin | 72.9 | 2.4 |
| Cooling | Tstp | 74.4 | 3.0 |

Nov 15 - April 1 for the heating season, and June 1 - September 15 for the cooling season

Both tables calculated using the same 200 US thermostats with at least 80% data coverage for 2014

heating (or cooling) season as any day where the heating (or cooling) equipment ran

# Follow on to 1/16 meeting on algorithms

- Discussed correlating run time to $\Delta T$, or to a measure like heating degree days (HDD), but based on $\Delta T$.
- EPA committed to send out several versions of algorithms for these methods.
- Versions became available on Google Drive, and posted on energystar.gov on 1/30.
- Any comments?  What are participant's status on this work?

# Discussion re baselines

- Fine to determine comfort baseline temp excluding shoulder seasons.
  - Some convincing may be needed
- Differences between vendors and regions – some should be corrected (population of users) and others should not (effectiveness of influencing comfort temperatures)
- How would we tell where variations come from?
- Counts of included homes by zip code for the sample provided? Would that be ok? Sounds like probably yes?
- How large should the sample be? Large enough that the standard variation of the mean is less than 0.2 F.
- If there's a zip code table, DOE climate regions are fine.

# Discussion re algorithm

- Compressor utilization:
  - Capacity rating (kW) of auxiliary heat varies by climate and by the installing contractor
  - Service providers do not typically know the rated capacity of aux heat in their customer's homes.
  - Can do a crude estimate based on design temperatures, but it's very crude – not clear it's helpful
  - Worth thinking about (as a separate strain) how we would evaluate savings from better control of heat pumps in heating mode.
- Alan proposes we include multi-speed HVAC and heat pumps with aux heat in the sample – most disagree
- Vendors propose strategy to avoid use of aux heat and we accept based on that?
- Information on CU by outdoor temp bin?  In various climates?

# Parking lot from 1/16

- Will providers use this method to make savings claims?
- Verification and gaming the system?
- Modulating system thermostats not eligible - market disadvantage?
- Does the customer base bias the metric results, aside from the qualities of the products?
- Add on today's parking lot items…

# Contact Information

Abigail Daken
EPA ENERGY STAR Program
202-343-9375
daken.abigail@epa.gov

Doug Frazee
ICF International
443-333-9267
dfrazee@icfi.com